Single-cell profiling identifies aberrant STAT5 activation in myeloid malignancies with specific clinical and biologic correlates.

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Public Summary:

Scientific Abstract:
Progress in understanding the molecular pathogenesis of human myeloproliferative disorders (MPDs) has led to guidelines incorporating genetic assays with histopathology during diagnosis. Advances in flow cytometry have made it possible to simultaneously measure cell type and signaling abnormalities arising as a consequence of genetic pathologies. Using flow cytometry, we observed a specific evoked STAT5 signaling signature in a subset of samples from patients suspected of having juvenile myelomonocytic leukemia (JMML), an aggressive MPD with a challenging clinical presentation during active disease. This signature was a specific feature involving JAK-STAT signaling, suggesting a critical role of this pathway in the biological mechanism of this disorder and indicating potential targets for future therapies.